U.S. Department of Energy
Energy Efficiency and Renewable Energy

FY 2005 Wind Program Overview

Brian Smith

Technology Manager

National Renewable Energy Laboratory

Wind & Hydropower Technologies Program

Wind Program R&D Implementation Meeting

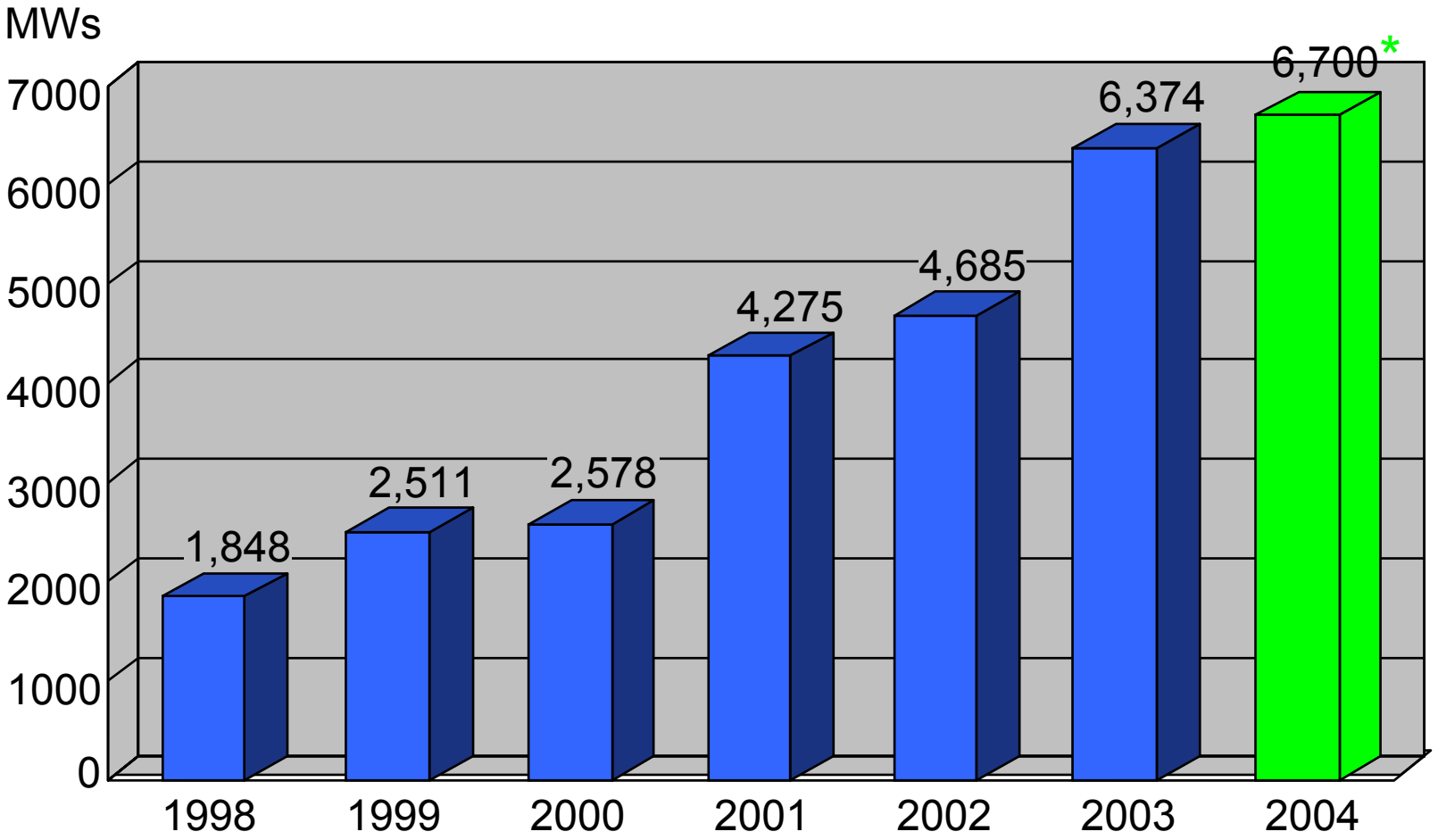
Broomfield, Colorado

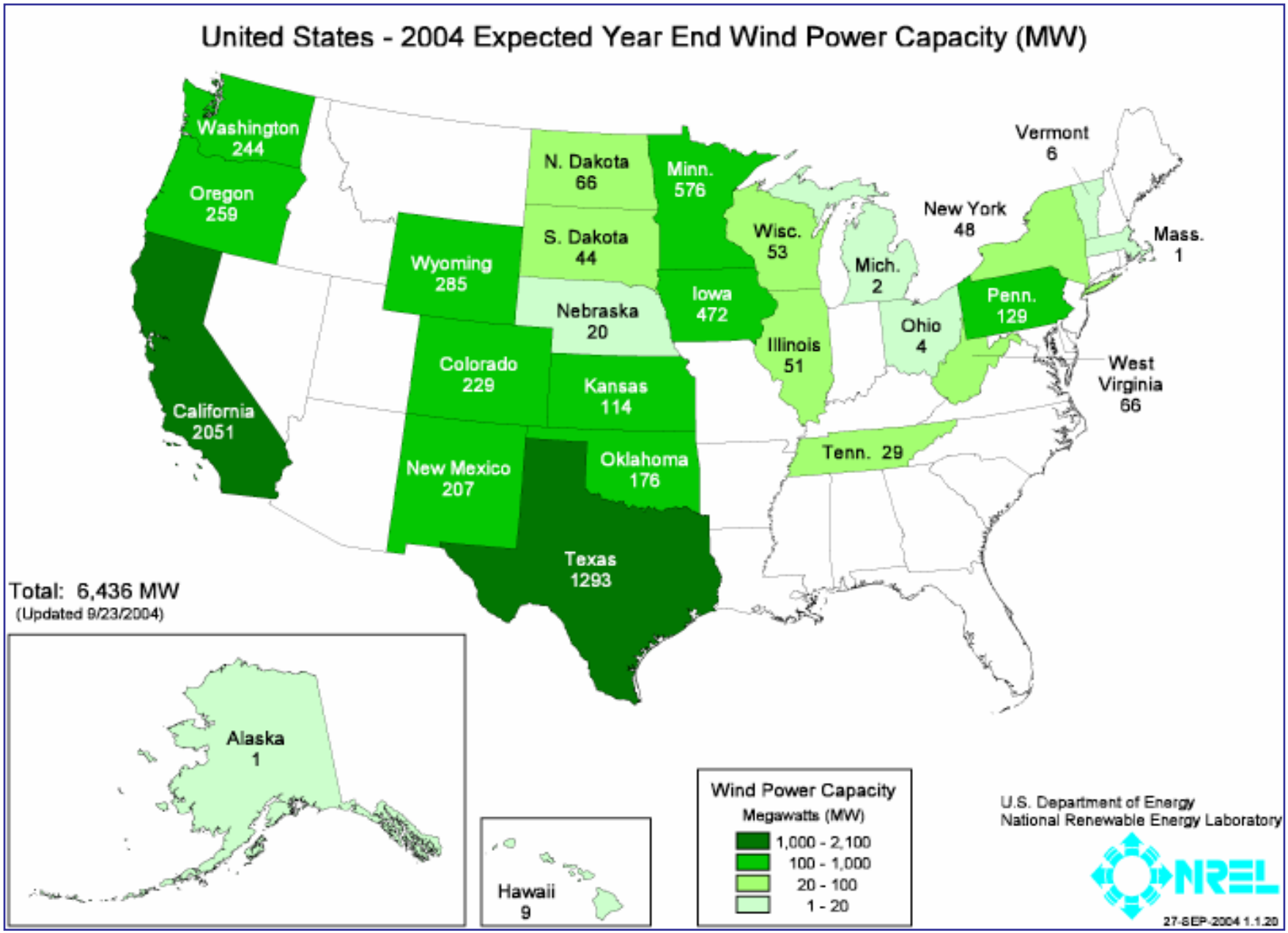
November 16, 2004

U.S. Department of Energy
Energy Efficiency and Renewable Energy

U.S. Wind Energy Capacity

(*Estimate provided by AWEA based on passage of PTC in early fall 2004)

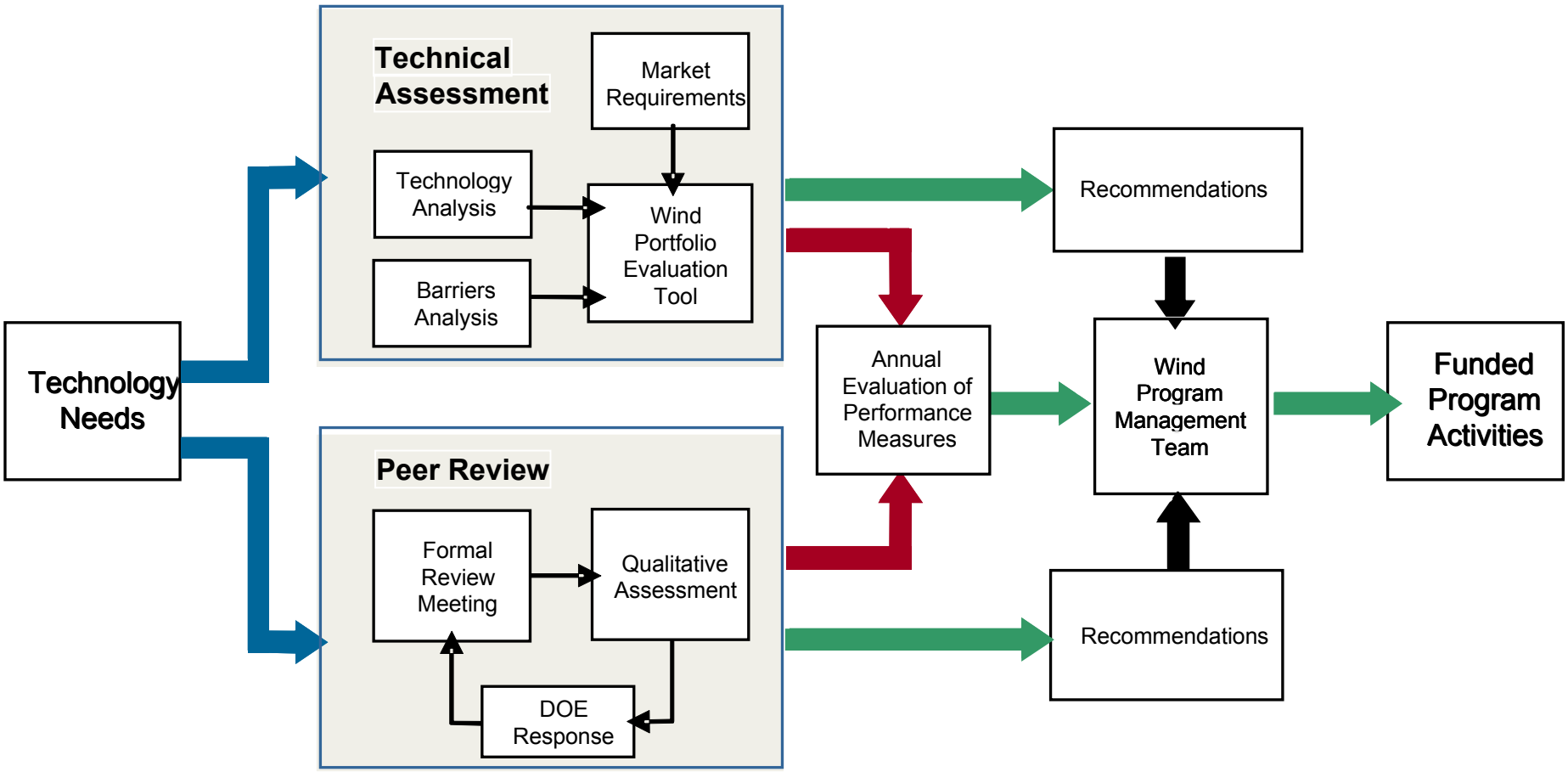




(Estimate provided by GEC based on 2004 completed and in-ground projects)

U.S. Department of Energy
Energy Efficiency and Renewable Energy

Program Planning Concept



U.S. Department of Energy
Energy Efficiency and Renewable Energy

MYPP and AOP

Wind and Hydropower Technologies Program

Wind Energy Multi Year Program Plan

For 2005-2010

Draft October 2004

U.S. Department of Energy
Energy Efficiency and Renewable Energy

U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

Wind and Hydropower Technologies Program
WIND ENERGY PROGRAM

FY 2005 Annual Operating Plan

DRAFT Revision 0.0
October 1, 2004

Approved by: _____ Date:_____
Peter Goldman
Program Manager, Wind and Hydropower Technologies
U.S. Department of Energy

Approved by: _____ Date:_____
Stan Calvert
Wind Team Leader, Wind and Hydropower Technologies
U.S. Department of Energy

Reviewed by: _____ Date:_____
Brian Smith
Technology Manager, Wind and Hydropower Technologies
National Renewable Energy Laboratory

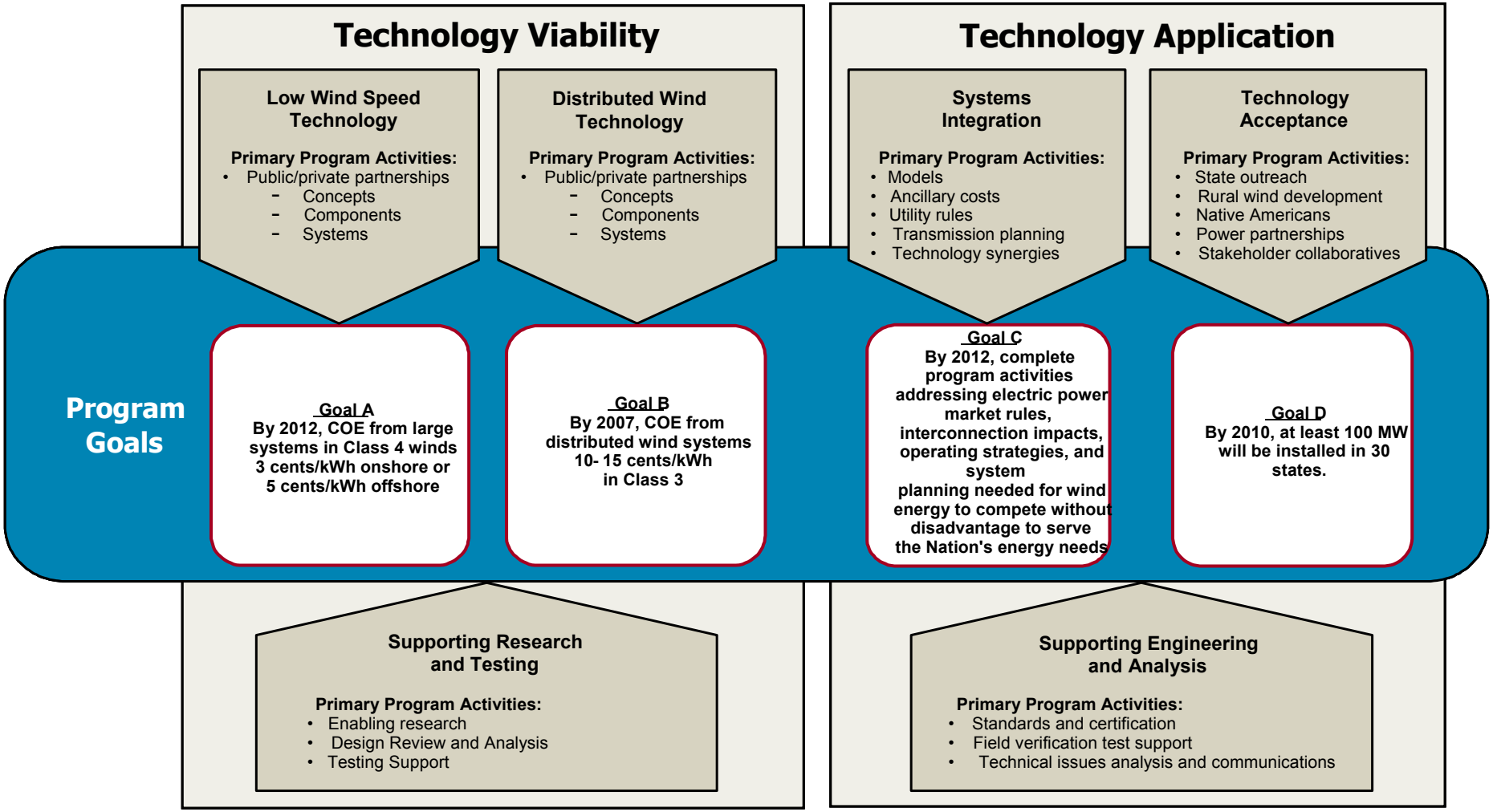
Reviewed by: _____ Date:_____
Paul Veers
Wind Energy Technology Manager
Sandia National Laboratories

Reviewed by: _____ Date:_____
Robert Thresher
Director, National Wind Technology Center
National Renewable Energy Laboratory

Wind & Hydropower Technologies Program: WIND ENERGY PROGRAM
Energy Efficiency and Renewable Energy
U.S. Department of Energy Washington, DC 20585

U.S. Department of Energy
Energy Efficiency and Renewable Energy

Program Elements



Wind Program Budget

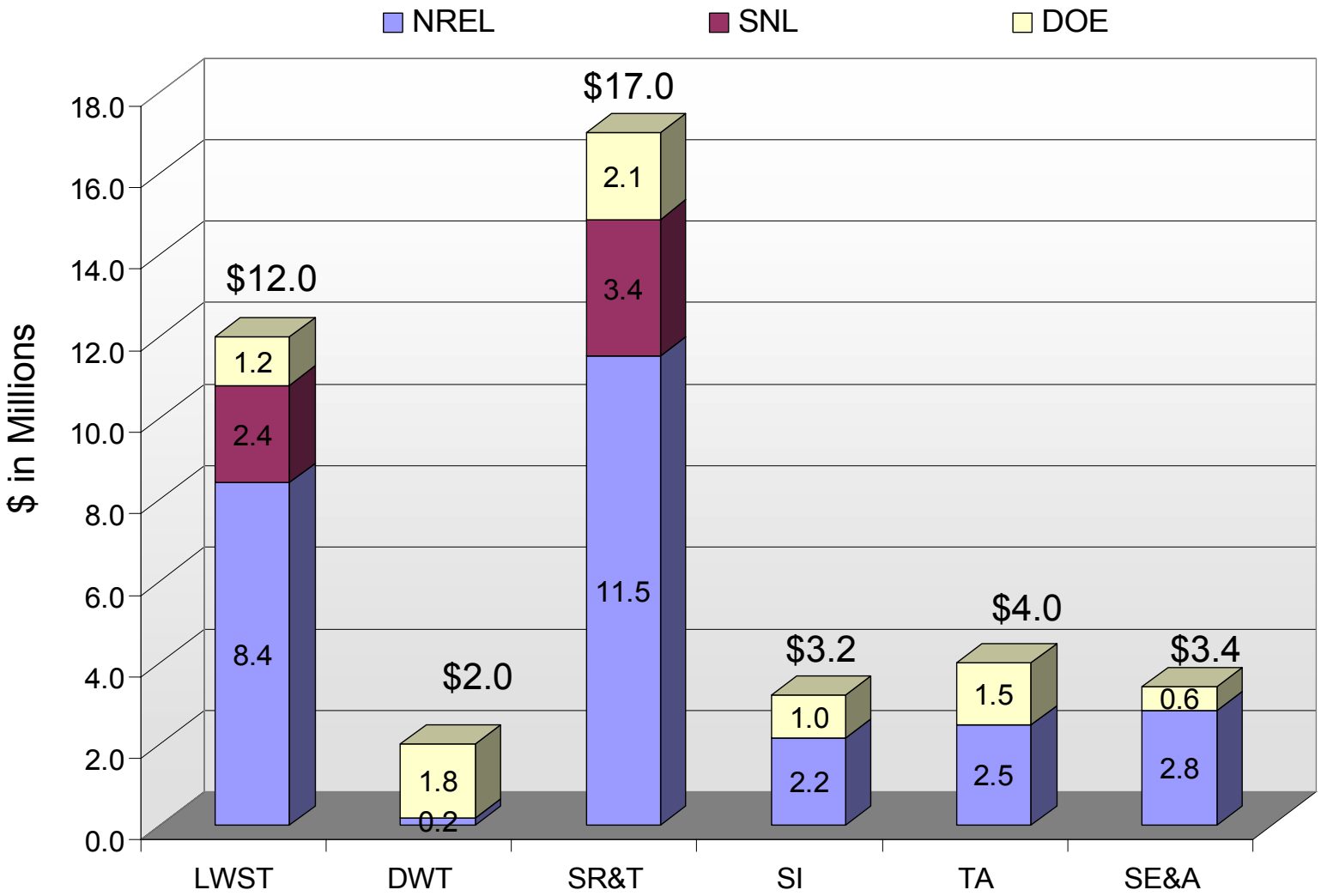
(Dollars in Millions)

FY04/FY05 Subprograms	FY04 Budget	FY05 Request
Technology Viability	28.6	31.0
Technology Applications	11.0	10.6
Earmarks	1.4	0.0
Wind Energy Program	41.1	41.6

U.S. Department of Energy
Energy Efficiency and Renewable Energy

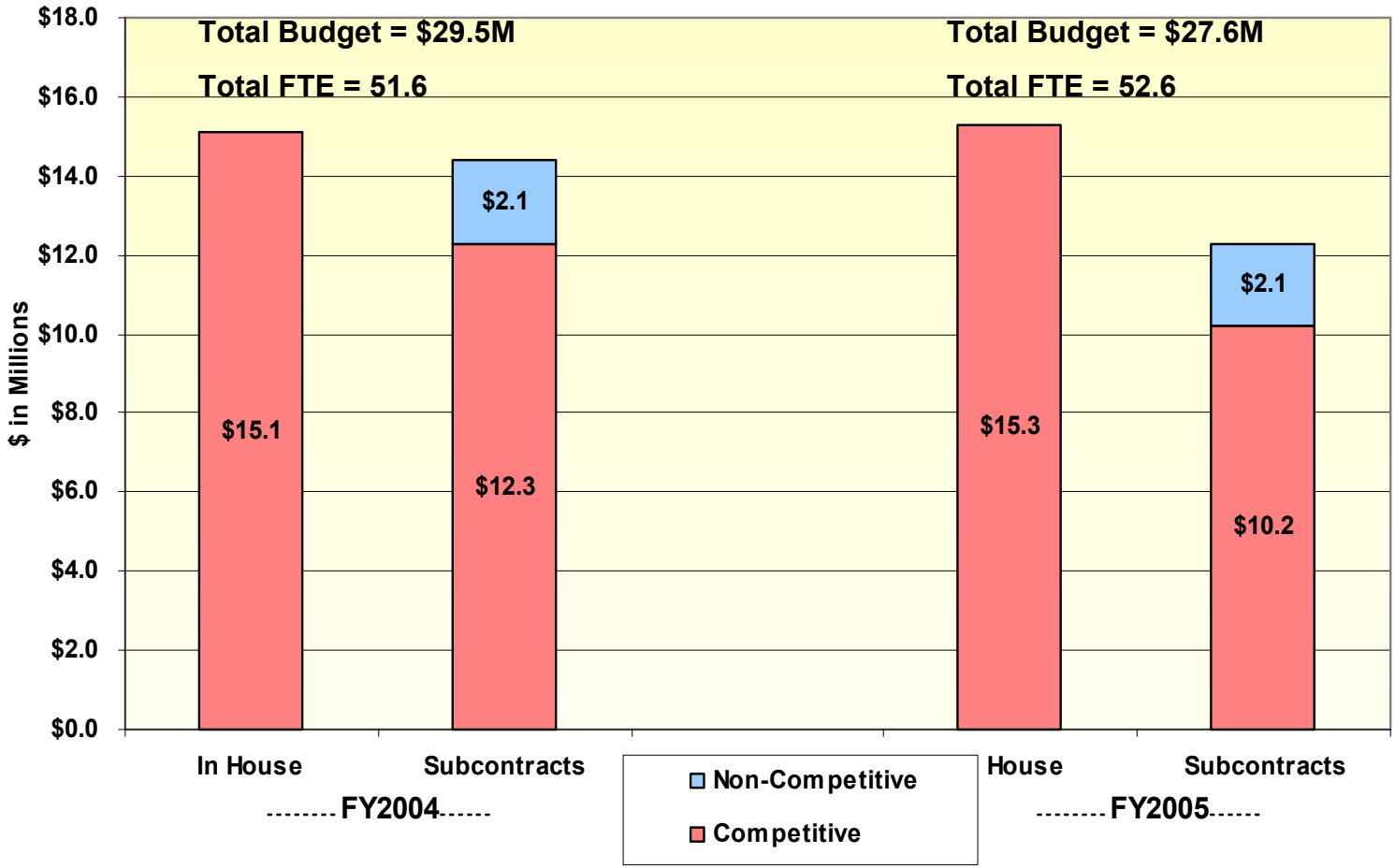
Wind Program Budget

FY05 Funding by Key Activity
Total Funding $41.6M



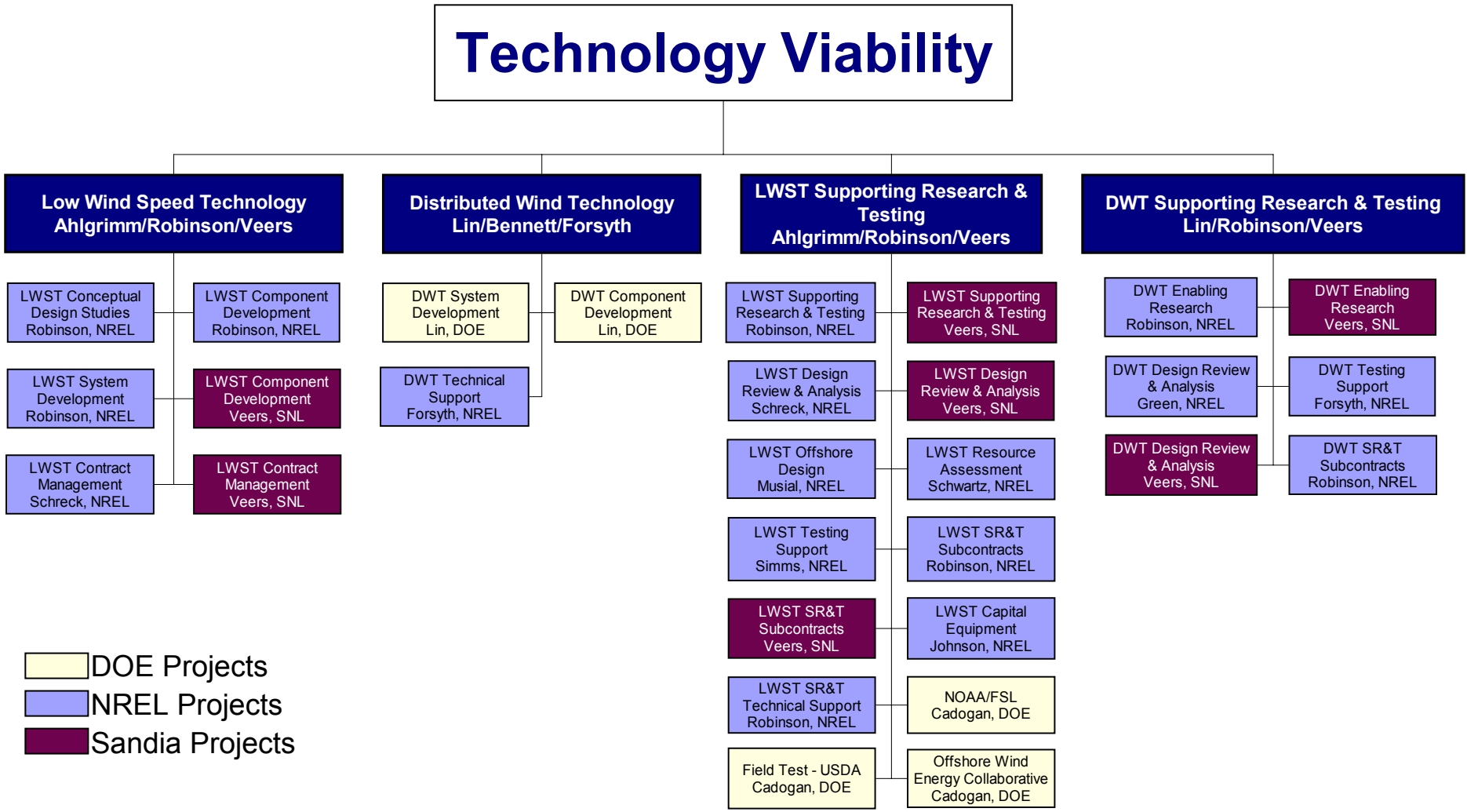
U.S. Department of Energy
Energy Efficiency and Renewable Energy

NREL Wind & Hydropower Program Funding
In House and Subcontracts
FY2004 and FY2005 (est)



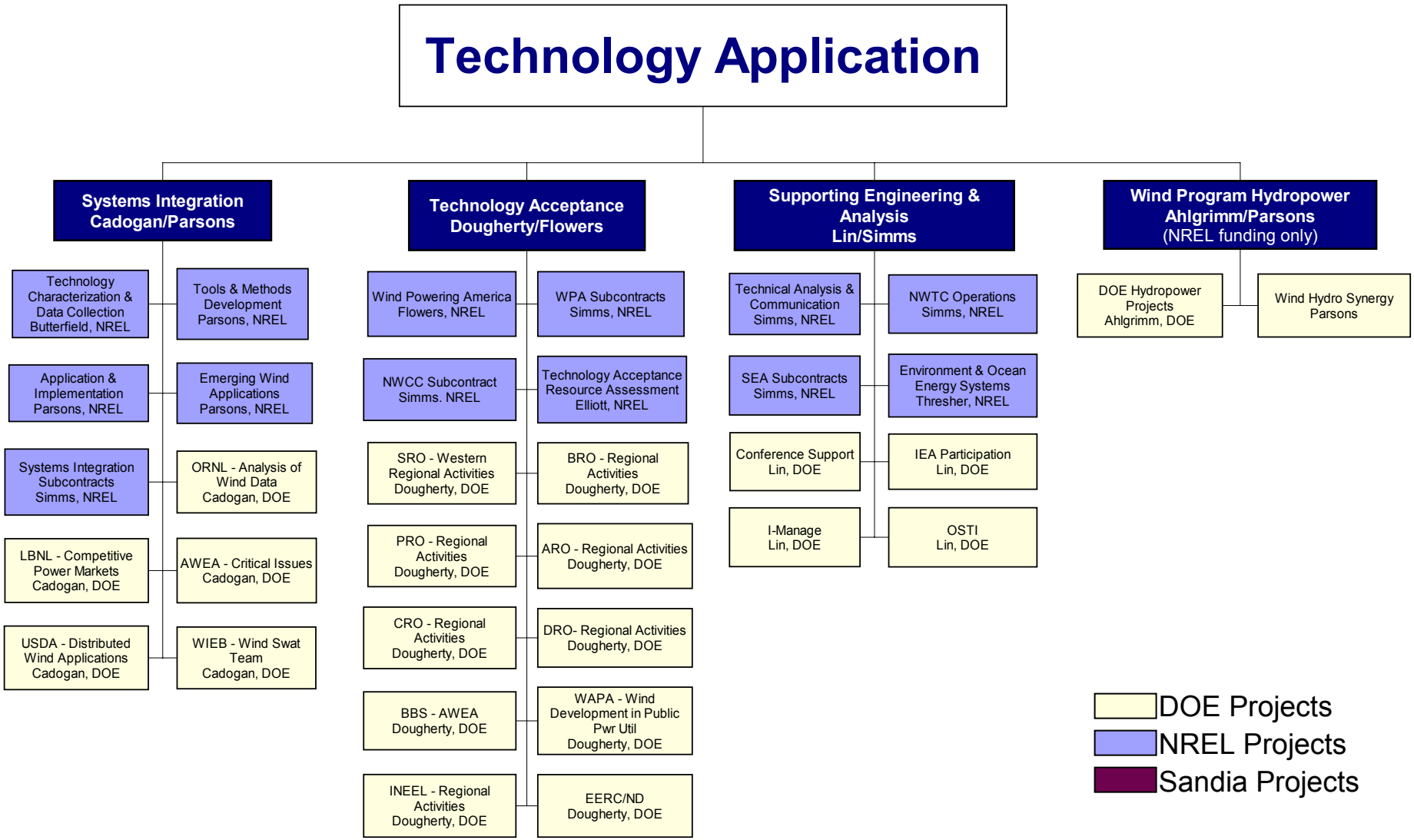
U.S. Department of Energy
Energy Efficiency and Renewable Energy

Wind Energy Program
Project Breakdown Structure



U.S. Department of Energy
Energy Efficiency and Renewable Energy

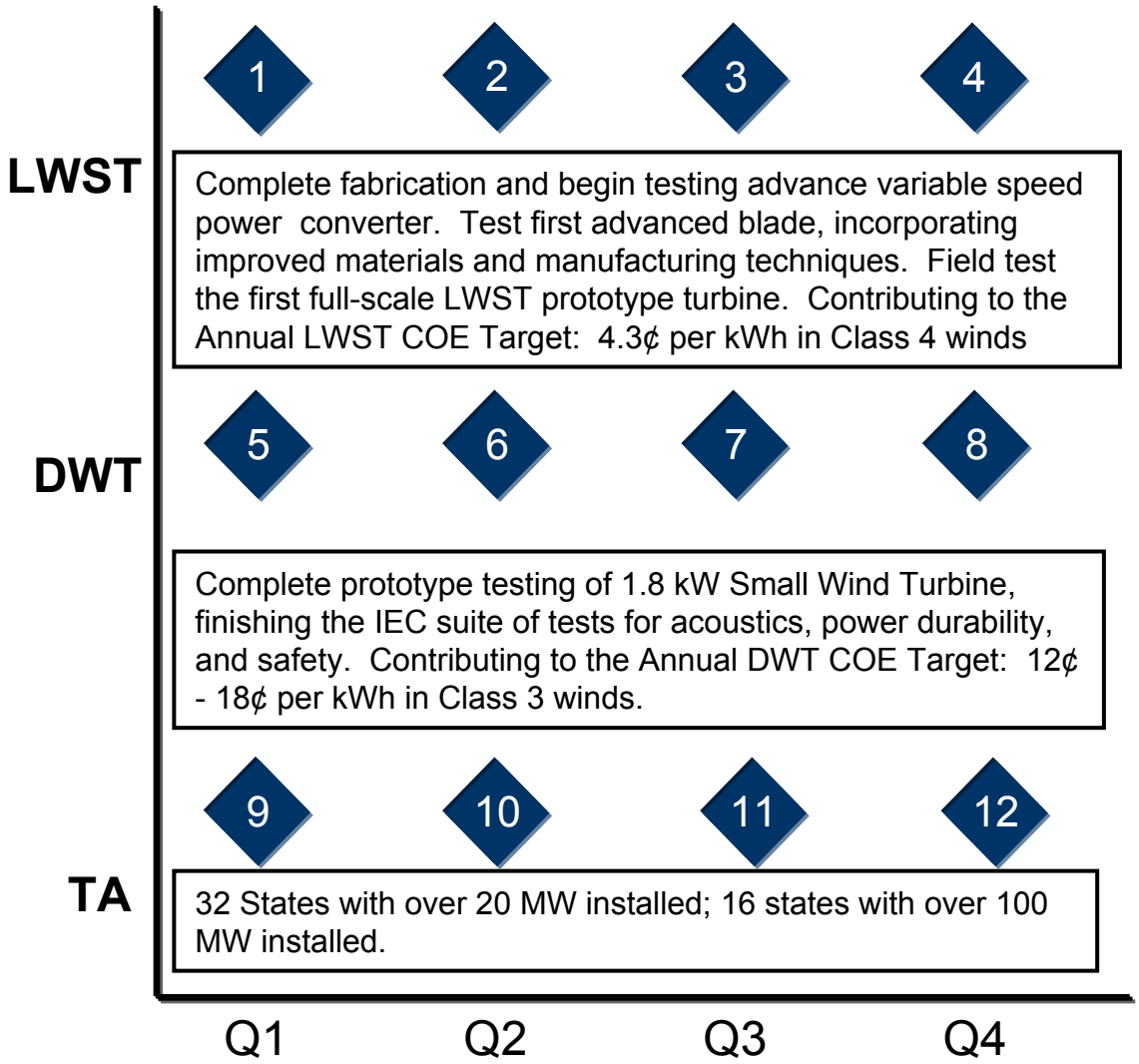
Wind Energy Program Project Breakdown Structure



U.S. Department of Energy
Energy Efficiency and Renewable Energy

Wind Energy Program

FY05 Joule Targets/Quarterly Milestones



1. Complete detailed design of advanced variable-speed power converter
2. Begin testing of subscale prototype carbon hybrid blade precursor to LWST megawatt scale advanced blade
3. Complete site selection for field testing of first full-scale LWST proof-of-concept turbine
4. Complete fabrication and begin testing advance variable speed power converter. Test first advanced blade, incorporating improved materials and manufacturing techniques. Field test the first full-scale LWST prototype turbine. Contributing to the Annual LWST COE Target: 4.3¢ per kWh in Class 4 winds
5. Complete installation of 1.8 kW wind turbine at the NWTC in preparation for field testing
6. Complete IEC Safety and Function Test on 1.8 kW wind turbine
7. Complete IEC acoustic and power performance tests on 1.8 kW wind turbine
8. Complete prototype testing of 1.8 kW Small Wind Turbine, finishing the IEC suite of tests for acoustics, power durability, and safety. Contributing to the Annual DWT COE Target: 12 - 18 cents per kWh in Class 3 winds
9. Provide technical and outreach support on wind technology at one public power wind event
10. Provide technical and outreach support for one multi-state, agricultural sector wind event
11. Convene nation-wide state wind work group (WWG) summit
12. 32 States with over 20 MW installed; 16 states with over 100 MW installed